FINDING OF NO SIGNIFICANT IMPACT
FOR THE GOODAN-KEIL COUNTY WATER DISTRICT, MONTANA
WATER SYSTEM IMPROVEMENTS

TO: ALL INTERESTED PERSONS

Date:	January 31, 2008
Action:	Funding Drinking Water System Improvements
Location of Project:	Goodan-Keil County Water District, Missoula County, Montana
DEQ SRF Loan:	$ 500,000
TSEP Grant:	$ 532,250
TSEP TA Grant:	$ 15,000
DNRC Grant:	$ 100,000
Local Funds	$ 23,150
Total Project Cost:	$1,170,400

An environmental assessment (EA) has been prepared by the Montana Department of Environmental Quality (DEQ) for proposed funding for improvements to the Goodan-Keil County Water District's water storage, transmission, distribution, and supply systems. The proposed improvements include the construction of a new 150,000 gallon water storage tank and access road, replacement of approximately 4,370 feet of 4-inch PVC transmission main between the well field and water storage tank with 6-inch PVC, installation of seven new fire hydrants and new water service meters, replacement of well field piping with 2-inch PVC, a new pumphouse and all associated valves, appurtenances and controls. The purpose of the project is to make improvements to the community's water supply system needed to protect public health.

The affected environment will primarily be the Goodan-Keil subdivision, northwest of Missoula, Montana, and the immediate vicinity. The human environment affected will include residents and visitors of the aforementioned areas. Based on the EA, the project is not expected to have any significant adverse impacts upon terrestrial and aquatic life or habitat, including endangered species, water quality or quantity, air quality, geological features, cultural or historical features, or social quality.

This project will be funded in part with a low interest loan through the Montana Drinking Water State Revolving Fund Program, administered by the Montana Department of Environmental Quality and the Montana Department of Natural Resources and Conservation. The loan will be repaid by a General Obligation Bond tax assessment.

The DEQ utilized the following references in completing its EA for this project: a Uniform Environmental Checklist for Montana Public Facility Projects and a Goodan-Keil County Water District Water System Preliminary Engineering Report (dated June 2006) both prepared by Anderson-Montgomery Consulting Engineers, the community's consulting engineer. In addition to these references, letters were sent to; Montana Department of Environmental Quality (MDEQ) SRF Loan Program, Montana Department of Fish, Wildlife & Parks (FWP), Montana Department of Natural Resources

& Conservation (DNRC) Floodplain Management, United States Fish and Wildlife Service (USFWS), United States Army Corps of Engineers (USACE), and Montana State Historic Preservation Office (SHPO). Response letters have been received from the USACE, USFWS, FWP, MDEQ, and Montana SHPO. These references are available for review upon request by contacting:

Robert Ashton
Montana DEQ
State Revolving Fund Program
P.O. Box 200901
Helena, MT 59620-0901
Phone (406) 444-5316
Email: rashton@mt.gov

or

Alan Bronec, President
Goodan-Keil Water District
P.O. Box 16501
Missoula, MT 598083
(406) 829-1485

Comments on this finding or on the EA may be submitted to DEQ at the above address. After evaluating substantive comments, DEQ may revise the EA or determine if an EIS is necessary. This finding will stand if no substantive comments are received during the 30-day comment period or if substantive comments are received and evaluated and the environmental impacts are still determined to be non-significant.

Signed,

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Todd Teegarden, Chief
Technical & Financial Assistance Bureau

GOODAN-KEIL COUNTY WATER DISTRICT
WATER SYSTEM IMPROVEMENTS

ENVIRONMENTAL ASSESSMENT

I. COVER SHEET

A. PROJECT IDENTIFICATION

Applicant:	Goodan-Keil County Water District
Address:	P.O. Box 66 Florence, MT 59833

B. CONTACT PERSON

Name:	Alan Bronec, President Goodan-Keil County Water District
Address:	P.O. Box 66 Florence, MT 59833
Telephone:	(406) 829-1485

C. ABSTRACT

The Goodan-Keil Water District, through a 2006 Water System Preliminary Engineering Report (PER), prepared by Anderson-Montgomery Consulting engineers, has investigated the needs of their public water system. The PER examined all components of the system including supply, transmission, storage, and distribution. The PER identified significant deficiencies within the district's supply, transmission and storage systems. The existing storage tank is undersized and can not meet operational or fire flow requirements, the piping at the well field is undersized and of poor construction and the transmission main from the well field to the water storage tank has experienced ruptures resulting in the loss of water to the district. Also, the number of fire hydrants on the distribution system does not provide adequate coverage for all area residences. Replacing the storage tank, well field and transmission main piping and adding fire hydrants is necessary to improve system reliability and pressure and improve fire protection.

Alternatives for remedying the system deficiencies were developed and an alternatives evaluation was completed in the 2006 PER with additional analysis done by the district and their engineer in 2007. Based on the analysis, specific water system improvements were recommended. The recommended alternatives include the following improvements:

Storage Improvements
- Replace the existing 40,000 gallon water tank with a new 150,000 gallon tank.
- Improve the water storage tank access road.

Well Field Improvements
- Replace well field piping with 2-inch PVC and install proper valves and fittings.
- Elevate the casing for Well #3 to comply with State design standards.

Transmission Improvements
- Replace approximately 2,000 lineal feet of 4-inch PVC transmission main from the Well Field to the Booster Station with 6-inch PVC or DIP.

- Replace approximately 2,370 lineal feet of 4-inch PVC transmission main from the Booster Station to the water storage tank with 6-inch PVC or DIP.

Water Conservation

- Install new meters with remote-read capabilities and automated billing software.

Fire System Improvements

- Install seven new fire hydrants and isolation valves throughout the distribution system.

The project will be funded by a combination of state grants and loans and local funds. This Environmental Assessment (EA) examines the work as described in the PER and the submitted State Revolving Fund Loan Application. Based on this review, environmentally sensitive characteristics such as wetlands, floodplains and threatened or endangered species are not expected to be adversely impacted as a consequence of the proposed Phase I project. No significant long-term environmental impacts were identified.

Under Montana law (75-6-112, MCA), no person, including a municipality or county, may construct, extend, or use a public water system until the DEQ has reviewed and approved the plans and specifications for the project.

D. COMMENT PERIOD

Thirty (30) calendar days.

II. PURPOSE AND NEED FOR ACTION

The Goodan-Keil County Water District is made up of 81 existing homes with possible future expansion of 6 additional homes. All users within the District are residential, there are no commercial or industrial water users. The water system currently utilizes three groundwater supply wells. Pressure control and storage is provided by a 40,000 gallon concrete storage tank located on a hill just southeast of the development. The distribution system consists primarily of 6.0” PVC pipe with six fire hydrants and two pressure reducing stations. A booster station assists in pumping water from the well field to the storage tank – total vertical lift is over 640' from the well field to the storage tank.

The 2006 PER provides a comprehensive engineering analysis of Goodan-Keil’s existing water system, future demands and recommended improvements. The following is a summary of primary problems identified in the PER.

1. The 40,000-gallon concrete storage tank is grossly undersized. With Goodan-Keil’s average daily demand of 64,000 gpd, the tank does not comply with Design Circular MDEQ-1 section 7.0.1. The PER includes hydraulic modeling also indicating the tank is undersized.

2. The 40,000-gallon tank is also undersized with regard to fire flows. Uniform Fire Code requires a minimum fire storage volume of 60,000 gallons (500 gpm fire flow for 2 hours) for residential developments such as Goodan-Keil. The Goodan-Keil distribution system has fire hydrants.

3. The District’s well field piping gallery is of poor construction and consists of two-inch diameter galvanized piping. The piping is exhibiting signs of advanced interior and exterior corrosion. Pipe failures and repairs are increasing in frequency.

4. Piping from the well field to the booster station has experienced a series of ruptures which have resulted in the District being out of water. The original pipe installation was of poor quality and the routing introduces significant frictional losses. Based on further analysis by the community and their engineer in 2007, the piping from the booster station to the water storage tank is of the same material, construction and age and warrants replacement.

Proper water supply, transmission, storage and distribution systems are important for public health and safety. Instigating the changes recommended in the PER will reduce the public health and safety risk to the residents and visitors of Goodan-Keil Water District, Montana.

III. ALTERNATIVES INCLUDING THE PROPOSED ACTION AND COSTS

Alternatives analyzed in the 2006 Water System PER include the "do nothing" option or improving or repairing the existing problems identified with the water supply, transmission, storage and distribution systems.

The "no action" alternative was not considered beyond the initial screening stage. This alternative will not remedy the problems currently being experienced with the water system. If improvements are not made to the system, the community will continue to have periods of low water pressure, high system maintenance needs and poor fire protection.

The PER examined the capital costs and net present worth costs of the viable alternatives to correct the water system problems. In addition to cost analysis the PER included an impact analysis of the alternatives based on effectiveness, O&M complexity, longevity, environmental impacts, public health and safety and implementability. A score for each criterion was assigned, ranging from 1 to 4 with a higher score equating the greater benefit. The alternative with the highest relative score represented the most favorable alternative. A summary of the results for each component of the water system will follow.

Storage Improvements

The existing storage includes one 40,000 concrete tank. The PER determined the required Goodan-Keil system storage need at 150,000 gallons. This includes the systems 20 year design operational flow and fire flow. The feasible alternatives for enhancing storage are to construct additional volume, or regionalize with the adjacent development known as Circle H Ranch/West Point. Alternatives for enhancing Goodan-Keil's storage include constructing either a concrete or steel storage tank adjacent to the existing tank. Regionalization would involve the installation of additional pipe to connect the systems.

a. **Storage Tank #1 - Concrete** - A ground level circular concrete tank would be located on land adjacent to the District's existing storage tank. A circular tank capable of holding 150,000 gallons would result in a tank approximately 40 feet in diameter with a height of 18 feet. The optimal location for a storage tank would allow the operating pressure of the system to fall within a range of 40 to 60 pounds per square inch (psi), maintaining a minimum operating pressure of 35 psi at the high point in the distribution system. To reduce the visual impact of the tank, it is proposed that the structure be partially buried. MDEQ standards require that no less than 2 feet of the top of the tank be exposed to allow access and limit any intrusion from surface water. It is presumed that this tank would be a pre-stressed, post-tensioned concrete tank similar to that supplied by DYK®. The site where the tank would be located should be fenced or restricted from public access. The District's existing 4" supply pipe and 6" distribution piping would be disconnected from the existing storage tank and re-routed to the new tank, complete with the necessary valves and fittings. The supply line would discharge into the tank above the high water level, providing an air-break and eliminating the possibility of back-siphoning.

Costs – The estimated construction costs for the 150,000-gallon concrete tank are **$478,500** and the estimated total cost including contingencies, engineering and administration is roughly **$662,200**.

b. **Storage Tank #2 – On-Grade Welded Steel Storage Tank** – A ground-level circular steel storage tank would be located on land adjacent to the District's existing storage tank. Dimensions would be similar to that of the proposed concrete tank at 40' diameter and 18' tall. The optimal location for a storage tank would allow the operating pressure of the system to fall within a range of 40 to 60 psi, maintaining a minimum operating pressure of 35 psi at the high point in the distribution system. Unlike the concrete tank, it is proposed that the steel tank would be exposed. This limits corrosion of the steel structure and allows for more thorough visual inspection of the tank's condition. To reduce visual impact, the tank would be installed in an excavated depression adjacent to the District's existing tank and would then be screened with an earthen berm or vegetation. The District's existing 4" supply pipe and 6" distribution piping would be disconnected from the existing storage tank and re-routed to the new tank, complete with the necessary valves and fittings. The supply line would discharge into the tank above the high water level, providing an air-break and eliminating the possibility of back-siphoning.

Costs – The estimated construction costs for the 150,000-gallon welded steel tank are **$428,500** and the estimated total cost including contingencies, engineering and administration is roughly **$595,500**.

c. **Storage Tank #3 – Regionalization with Circle H Complex** – There is an existing development located west and north of Goodan-Keil that currently has approximately 135 residences and an anticipated build out of 316± residences. Known as Circle H and West Point (Circle H Complex), the system has an established water system including a 500,000-gallon concrete storage tank approximately 1,700' directly north of Goodan-Keil. Elevation of the Circle H tank is slightly lower than Goodan-Keil's existing tank with the base at 3716 and a high water elevation at 3736. The tank has a 66' diameter and a sidewall depth of 20'.

This alternative would require the installation of approximately 5,700 feet of new six-inch transmission main from the Goodan-Keil well field to the Circle H storage tank and the installation of approximately 3,400 feet of 10-inch main line to connect the Circle H tank to the Goodan-Keil distribution system.

Costs – The estimated construction costs for connecting to the Circle H Ranch tank are **$781,900** and the estimated total cost including contingencies, engineering and administration is roughly **$1,063,400**. This cost estimate is largely presumptive at this point since Circle H Ranch has not provided firm figures in terms of compensation for use of its storage tank by Goodan-Keil. The estimated $157,500 tank compensation cost could increase by more than $120,000.

A summary of the storage alternative analysis can be seen in Table 1 below.

Table 1. Storage Alternatives

Alternative	Capitol Cost	Net Present Worth Cost	Impact Analysis
a. New 150,000 gallon concrete tank	$662,168	$601,928	17
b. New 150,000 gallon steel tank	$595,469	$608,591	12
c. Regionalization with Circle H Ranch	$1,063,387	$1,002,131	14

Based on the results of the storage alternatives analysis the **PER recommended Alternative c. the construction of a 150,000 gallon concrete water storage tank** adjacent to the existing 40,000 gallon tank. This work will also include improvements to the all season access road needed to operate and maintain the storage system. Due to the lower construction cost of a steel tank the community will request bids for both concrete and steel prior to selecting the final tank design.

Well Field Improvements

The only feasible alternative for resolving the poor piping at the District's well field is to completely replace all of the supply piping from each well's pitless adaptor to the water system's entry point (manifold). Pressure in the well field piping is 185 psi when the system is delivering 180 gpm. With the relatively high pressures in the well field piping, a preliminary design includes the use of 2" diameter Schedule 80 PVC pipe to replace all the existing galvanized pipe for construction of the well manifold. This alternative also includes a new 10'x12' pump-house that will house new control and check valves for all three active wells, as well as the control system. It is anticipated that the existing magnetic flow meter will be re-used since it has provided dependable service historically.

Costs – The estimated construction costs for replacing all of the well field piping are **$31,400** and the estimated total cost including contingencies, engineering and administration is roughly **$42,700**. Based on the results of the alternatives analysis the **PER recommended the replacement of the well field piping.**

Work at the well field will also include bringing Well #3 up to state standards by exposing 18-inches of the well casing and installing a retaining wall between the well and West Harrier Street. The proposed CMU retaining wall is needed to keep the road embankment from encroaching on the well head. The cost to bring Well #3 up to current State design standard is estimated at **$5,800**.

Transmission Improvements

Alternatives to resolve problems with 2,350 lineal feet of existing 4" PVC supply line from the well field manifold to the booster station in order to reduce water hammer, frequent breaks and poor construction include the following:

- Replacement of the entire length with 6" diameter DIP along a revised alignment to minimize bends and reduce overall length.
- Install proper thrust restraint on 3 bends of the existing 4" PVC and re-route 400 lineal feet of watermain along a new alignment to minimize bends and reduce overall length.

a. **Transmission Piping Alternative #1 – Replace with 6" DIP –** This alternative includes installation of approximately 1,950 lineal feet of 6" DIP along a revised route from the well field to the booster station. The new route utilizes an unused 12" diameter C900 carrier pipe the District installed under Interstate 90 in an abandoned cattle crossing. The new

alignment removes two adverse bends in the supply pipe. The increased pipe diameter from the existing 4" will reduce frictional losses in the entire 1,950' length.

Costs – The estimated construction costs for replacing and re-routing the supply piping are **$106,200** and the estimated total cost including contingencies, engineering and administration is roughly **$144,400**.

b. Transmission Piping alternative #2 – Re-route 400 LF and Provide Thrust Restraint – This alternative includes excavation of five bends, installation of thrust restraint and thrust blocking at those bends, and installation of approximately 400 lineal feet of 6" DIP through an unused 12" diameter C900 carrier pipe the District installed under Interstate 90 in an abandoned cattle crossing. The new alignment removes two adverse bends in the supply pipe. Total dynamic headloss calculations indicate the increased pipe diameter through the carrier pipe will reduce frictional losses by an estimated 4% overall.

Costs – The estimated construction costs for restraining and re-routing the supply piping are **$37,300** and the estimated total cost including contingencies, engineering and administration is roughly **$50,700**.

A summary of the transmission main alternative analysis can be seen in Table 2 below.

Table 2. Transmission Alternatives

Alternative	Capitol Cost	Net Present Worth Cost	Impact Analysis
a. Replace with 6-inch DIP and re-route	$144,400	$162,430	16
b. Restrain key joints and re-route	$ 50,700	$84,858	13

Based on the results of the transmission alternatives analysis the **PER recommended Alternative a. the re-routing and replacement of approximately 1,950 lineal feet of transmission.**

In 2007 the community and their engineer examined the rest of the original 1978 four-inch transmission main from the booster station to the water storage tank and **recommended that this 2,370 feet of pipe also be replaced with new 6-inch PVC** to further reduce frictional losses and maintenance cost to the district. The estimated construction cost for this additive work is $99,400 and the estimated total cost including contingencies, engineering and administration is roughly **$135,200**.

Water Conservation

The PER recommended new water meters be installed at all service connections. The new meters would replace existing, manual-read meters at each service connection to the system. The existing meters are approaching 17-years of age and are showing signs of wearing out. The District has been replacing some meters that have failed, but there are still 75± old meters and all of them are manual-read. Properly operating meters will encourage water conservation and, given the current high water usage, should result in a significant reduction in water consumption. The meter improvements would also include meter reading equipment and the necessary software to manage the data and create monthly bills. Most of the meters will be located within the existing meter pits. Approximately 10 meters would be relocated from homes to meter pits. A hand-held meter-reading device would interrogate each meter through a touch-pad and the data would then be uploaded to the District's computer where a new software package (QuikWater® or similar) would use it to determine water usage and create individual water bills.

The estimated construction costs for the new meters and billing system are **$27,300** and the total cost including contingencies, engineering and administration is **$36,600**. The cost estimate is based on a quote received by Hughes Supply in December 2005.

Fire System Improvements

With only six standard hydrants on the existing system, the lack of fire hydrants limits the ability of the local fire department to effectively access the water system for fire protection. DEQ-1 design standards suggest that hydrants be placed at intersections and spaced between intersections at 350 to 600 foot intervals. **The PER recommended an additional seven hydrants be added onto the system** to bring the system up to current State design standards. The new hydrants would be placed at optimal locations to insure good access for fire protection. The hydrants will utilize 6" diameter leads off the existing water system; have a bottom valve of at least 5", one 4½" pumper nozzle and two 2½" hose nozzles.

Costs – The estimated construction costs for installing seven new hydrants are **$32,200** and the estimated total cost including contingencies, engineering and administration is roughly **$43,100**.

Table 3 shows the estimated project costs for all components of the recommended water system improvements.

TABLE 3
RECOMMENDED CONSTRUCTION IMPROVEMENTS

ITEM	DESCRIPTION	ESTIMATED COST
Storage Improvements	New 150,000 gallon concrete tank and All season access road	$662,200
Well Field Improvements	Replace well field piping with new 2-inch PVC. Expose Well No. 3 casing to State Standards	$42,700 $5,800
Transmission Improvements	Replace ~2,000 feet of 4" PVC with 6" PVC Pipe (Well Field to Booster Station) Replace ~2,370 feet of 4" PVC with 6" PVC Pipe (Booster Station to storage tank)	$144,400 $135,200
Water Conservation	Install new meters with remote-read and automated billing software	$36,600
Fire System Improvements	Install seven new fire hydrants and isolation valves throughout the distribution system	$43,100
Total Water Improvements Construction Costs		**$1,070,000**

The estimated project construction costs seen in Table 3 does not include loan fees, grant application or grant administration fees associated with funding the project. For the proposed project, the Goodan-Keil Water District has received funding commitments of:

$ 532,250 Grant – Montana Department of Commerce/Treasure State Endowment Program (TSEP)

$ 100,000	Grant – Montana Department of Natural Resources and Conservation/Renewable Resource Grant and Loan Program (RRGL)
$ 500,000	Loan – Montana Department of Environmental Quality, State Revolving Fund Loan Program (SRF)
$ 23,150	Local Reserve funds expended for planning and grant application work
$ 15,000	Grant – TSEP Technical Assistance planning grant expended on the PER
$1,170,400	**Total Project Funding**

Total Funding for the proposed project is $1,170,400 with $38,150 expended on preliminary engineering and grant applications. The Goodan-Keil Water District expects to be able to complete all of the proposed water system improvements within the existing budget. In addition, the District intends to **refinance approximately $26,000** of existing water system debt within the proposed water system improvements project budget.

USER RATES

Goodan-Keil residential water system users pay a flat rate "infrastructure fee" of $25^{00} per month plus a usage rate of between $1^{00} and $3^{00} per thousand gallons, depending upon monthly consumption. Average monthly user charges are approximately $49 per month. The infrastructure fee can be utilized for servicing new debt. Wastewater treatment is provided by onsite septic systems, consequently, there are not monthly charges for sewer. The septic systems do require on going maintenance including pumping costs and replacement, as needed.

Given the estimated project costs shown above, user costs are anticipated to rise by an estimated $17 per month for a total of approximately $66 per month for water. Higher usage above the normal "base" usage rate would increase the monthly cost.

IV. AFFECTED ENVIRONMENT

A. STUDY AREA

The planning area for the PER includes the area within the Goodan-Keil Water District boundaries and the immediate adjacent areas. Goodan-Keil is located in western Montana roughly 2.5 miles northwest of the City of Missoula. The District is located directly north of the Airport Way on-ramp for Interstate 90. The residential development, well field and storage tank are primarily situated north of the Clark Fork River in Township 14 North, Range 20 West Section 36. There is a small portion of the distribution system located in Section 35AA.

B. POPULATION AND FLOW PROJECTIONS

Population Projections

The Goodan-Keil development is a satellite or "bedroom" community to the City of Missoula, given its proximity to the urban area. The area is located in Census Tract #2.02 Block Group 3 of Missoula County. The specific blocks within the census-designated place include Blocks 3004, 3017, 3018, 3021 and 3023. Note that most of the census blocks include area that is outside of the Goodan-Keil District boundary. The PER examined data from the US Census Bureau database for the year 2000 census and determined the growth rate for Missoula County from 1990 to 2000 was almost 22%. It should be noted that while the area surrounding Goodan-Keil will likely grow at a comparable rate in the future, the District is nearly fully developed and significant future growth is not anticipated. A "build-out" from the existing 81 to 87 residences plus some allowance for unanticipated growth will be utilized as the 2025 design criteria for Goodan-Keil. Beyond this figure, no major expansion of the District is planned at this time.

Future design populations for the design year 2025 will be based on 87 homes, an average of 2.94 persons per home and a resultant design population of 256 persons. An additional 10% increase in needed flow capacity will be included in planning for future improvements to provide some allowance for unanticipated flow demands on the system.

Flow Projections

The 2006 Water System PER includes the analysis of current and projected water demands and examines the source capacity of the existing water system. The average day is based on the evaluation of existing data, the maximum day is based on the maximum day of record and the peak hourly demand was calculated using the Uniform Plumbing Code Fixture Unit Analysis. The results of the flow projections can be seen in Table 4.

TABLE 4
GOODAN-KEIL WATER DISTRICT, MONTANA
CURRENT AND FUTURE WATER DEMANDS

Demand(gpcd)		2006[(1)] Demand (gpd)	2006[(1)] Demand (gpm)	2025[(2)] Demand (gpd)	2025[(2)] Demand (gpm)
Avg. Daily	269	64,060	45	75,547[(3)]	52
Max. Daily	869	206,822	144	222,529	155
Max. Hourly	1,575	374,850	260	403,200	280

[(1)] Based on Current Water Usage Data from 2002 to 2005
[(2)] Based on Population of 256
[(3)] Includes 10% unanticipated demand (gpd)

The PER examined the existing Goodan-Keil water source capacity and the established water rights and determined the water supply system was capable of meeting current and future needs. This analysis was based on a review of the Montana Department of Environmental Quality (DEQ) design standards effective at the time of review.

C. NATURAL FEATURES

Soils

The soils in the Goodan-Keil area are primarily Agrixerolls-Haploxerolls and Bigarm gravelly loams can be generalized as alluvial-based, well-drained sandy or gravelly loams on the surface with some inclusions of silts, gravels and cobbles. These type soils are generally found on alluvial fans, stream terraces and hills. Subsurface soil layers (deeper than 60") can have more clays present. Most of the soils in the Missoula valley fringes and bottom are coarse, alluvial parent materials deposited by the flow of water. These soils are characterized by high permeability and are rated as poor media for onsite disposal systems.

Topography and Geology

Clifford A. Smith, in his thesis, *The Hydrogeology of the Central and Northwestern Missoula Valley*, describes the general geology of the area as follows:

The Missoula Valley is an intermontaine basin surrounded by Precambrian and Cambrian bedrock and Tertiary sediments, and floored with Tertiary and Quaternary sediments. The Quaternary sediments are fluvial, alluvial, colluvial, glacio-lacustrine and generally are

sorted into three main strata. The Quaternary sediments form the framework for the principal aquifer of the valley.

Ground water is produced from all formations of the Missoula Valley. Ground water flow is generally to the northwest. Potentiometric surface and ground water flow maps indicate five sub-systems in the Missoula Aquifer, based on recharge and discharge areas and flow directions. Recharge to the aquifer is from the Clark Fork River, the creeks of the valley sides and the adjacent Tertiary sediments and bedrock highlands. Peak aquifer recharge is during the late spring and early summer. Aquifer response to recharge and discharge, as indicated by well water levels, depends upon the magnitude of the source of recharge, the well's proximity to the source, the hydrogeologic nature of the aquifer, and the effects of human consumption.

Missoula Valley ground water is calcium-bicarbonate type. The inorganic chemical analyses results corroborate a multiple system aquifer with different sources of recharge.

Land Use

The immediate land use in the District is residential with no commercial establishments, although a commercial bank is located on the southern perimeter of the District. The community is surrounded by rangelands and agricultural lands to the west, north and east. Rather significant commercial development is occurring to the south of Interstate 90 near the District's existing well field.

Floodplains and Wetlands

There are no floodplains or wetlands within the project area.

Historical/Cultural Resources

According to the Montana Historical Society, there have been no previously recorded historic or archaeological sites within the project area.

Biological Resources

Fauna of the general area consists of typical mammalian species found in the intermountain west, including elk, mule deer, whitetail deer, black bear, coyote, rabbit, skunk, weasel, rodents and others. Common bird species include the black-billed magpie, American robin, osprey, blackbird, sparrow, warbler, other raptors, game birds and others.

Vegetation

Vegetation types in immediate proximity to Goodan-Keil Water District generally include open grass lands. Agricultural use in the areas is limited and generally includes livestock grazing.

Surface Water and Groundwater

There are no surface waters within the project area.

The Goodan-Keil Water District wells are completed in the Missoula Valley alluvial aquifer. The aquifer primarily consists of unconsolidated alluvial sand, gravel and cobbles and is recharged mainly by leakage from the Clark Fork River, flow from tertiary sediments and fractures in Precambrian and Cambrian bedrock of the surrounding hills, leakage from irrigation canals and underflow from the Clark Fork Valley and tributary drainages.

Socio-Economic/Environmental Justice

The Goodan-Keil Water system was originally installed by a subdivision developer in 1978 and was operated by the Goodan-Keil Homeowners Association. Management of the system changed in August 2004 with the formation of Goodan-Keil County Water District.

The Water District was formed in order to create a more formalized structure for operating the system, address deficiencies and making improvements. Formation of the District was favored by 84 residents and opposed by 3.

The District includes 87 residential lots with 81 of these lots currently developed. The current population is estimated at 238 and the future "full build out" population estimated at 256.

V. DIRECT AND INDIRECT ENVIRONMENTAL IMPACTS OF PROPOSED PROJECT

No adverse impacts to the environment are anticipated by implementation of the proposed water system improvements. All of the well field and distribution system improvements will be located within existing easements and right-of-ways. The storage system improvements will require the district to purchase or lease approximately ¼-acres of land for the installation of the new storage tank. Both a partially buried concrete tank and an on grade steel tank will be considered with the steel tank having a greater visual impact than the concrete tank.

Soils Suitability, topographic and Geologic Constraints

No soil, topography or geological constraints are present for the proposed water project. Based on the existing conditions and soils types, the indirect impacts of the proposed water project will have no significant effect on the soils or topography.

Land Use

The well field and distribution work will be done within existing streets and right-of-ways and will therefore have no impact. The storage tank will require approximately ¼-acre of land currently used for limited pasturing of livestock.

Floodplains and Wetlands

The proposed Phase I water improvements project does not include work within floodplain or wetland areas and will not have a direct impact on these resources. The proposed water system improvements are not being done to facilitate growth and will have no indirect impacts to these resources.

Historical/Cultural Resources

The Montana State Historic Preservation Office (SHPO) was contacted to complete a cultural resource file search for the Goodan-Keil Water District area. A letter was provided by the Preservation Office. The Preservation Office noted that there have been no cultural resource inventories conducted in the area and therefore no documented historic or archaeological sites identified within the project area. However, the office noted that there is low likelihood for cultural properties to be impacted and a cultural resource inventory was not recommended.

The project construction specifications will require the contractor to notify SHPO, through the project engineer, in the event cultural materials are discovered during construction.

Biological Resources and Vegetation

The new water storage tank is the only part of the proposed project requiring work outside of existing streets and right-of-ways, however, there will be no direct impact to biological resources or vegetation due to the small scale and short duration of the tank work. The proposed water system improvements are not being done to facilitate growth and will have no indirect impacts to these resources.

Surface Water and Groundwater

The proposed water system improvement will replace or improve the existing distribution system and will have no impact to surface or groundwater resources.

Socio-Economic/Environmental Justice and Public Health

There is no known disproportionate increase in environmental or public health impacts to minority and low-income persons due to the proposed water improvements project. All persons would benefit from the enhanced water system, security, and fire protection from both a public health and safety basis and an economic basis. Water system improvements are important for public health and fire protection of residential areas

Air Quality

Short-term negative impacts on the air quality will occur from heavy equipment, dust and exhaust fumes during project construction. Proper construction practices and dust abatement measures will be implemented during construction to control dust, thus minimizing this problem.

Energy

During construction of the proposed project, additional energy will be consumed, resulting in a direct short-term increased demand on this resource. There will be no long term impacts to this resource as a result of the project.

Noise

Short-term impacts from increased noise levels will occur during construction of the proposed project improvements. Construction activities are anticipated to last three to five months and will occur only during daylight hours.

A. UNAVOIDABLE ADVERSE IMPACTS

Short-term construction related impacts, such as noise, dust and traffic disruption, will occur but should be minimized through proper construction management. Energy consumption during construction cannot be avoided.

B. CUMMULATIVE IMPACTS

This project addresses the existing water utility needs and will have no subsequent negative cumulative effects on resources, ecosystems or human communities. The projected growth of Goodan-Keil Water District over the next 20 years is not expected to cause cumulative effects beyond the capacity of the resources. Further environmental analysis would be required for any discussion of cumulative impacts beyond this scope and time frame.

VI. PUBLIC PARTICIPATION

The 2006 Water System PER recommendations were considered by the District Board and accepted, pursuant to obtaining affordable financing and minimizing user rate impacts. A public hearing was held on February 20, 2006 to consider the recommendations and pursuit of grant funding with no adverse comments received. In fact, the general consensus of the Goodan-Keil users present at the meeting, as well as the board members, was to pursue implementation of all the priority projects. The PER included letters of support and informal transcripts of the public meeting.

VII. AGENCY ACTION, APPLICABLE REGULATIONS, AND PERMITTING AUTHORITIES

All water system improvements (source, transmission, storage and distribution) will be designed to meet Montana DEQ requirements. Proper State regulatory review and approval of the project plans and specifications will be obtained. All applicable local, federal and state permits will be acquired including, but not limited to, a stormwater discharge permit and a construction-dewatering permit if needed.

All appropriate easements and access will be addressed with regards to the water system infrastructure. If required, land acquisition or long term agreements will be established for the land requirements associated with the new water storage tank.

VIII. REFERENCE DOCUMENTS

The following documents were utilized in the environmental review of this project and are considered to be part of the project file:

A. The Goodan-Keil County Water District, Montana – Water System Preliminary Engineering Report (PER), June 2006, prepared by Anderson~Montgomery consulting Engineers, Helena, Montana.
B. The Goodan-Keil Water District, Montana – State Revolving Fund Loan Application, October 2007, Prepared by Anderson~Montgomery consulting Engineers, Helena, Montana.
C. Uniform Environmental Checklist for Montana Public Facility Projects, June 2006, prepared by Anderson~Montgomery consulting Engineers, Helena, Montana.

IX. AGENCIES CONSULTED

The following agencies were contacted regarding the proposed construction of this project:

A. The Montana Department of Fish, Wildlife and Parks was asked in a letter by the project consultant for comments on the proposed project. The Montana Fish Wildlife and Parks reviewed the project area and in a letter dated March 8, 2006 stated "I have reviewed the proposed Goodan-Keil County Water District Project and would not anticipate any negative impacts to listed, threatened or endangered species."

B. The U.S. Fish and Wildlife Service reviewed the project and a comment letter dated February 24, 2006 stated "Considering the specific scope, nature and location of construction activities as described in your letter, we do not anticipate any project related adverse impacts to threatened, endangered, proposed or candidate species, or any critical habitat. Consequently, this concludes consultation on this project and no further review under Section 7 of the Endangered Species Act is necessary."

C. The U.S. Army Corps of Engineers was asked in a letter by the project consultant for comments on the proposed project. The U.S. Army Corps of Engineers stated that "…Army permits are required for the discharge of fill material into waters of the United States." The proposed water improvements project will not discharge fill materials to jurisdictional areas and will not require a permit.

D. The Montana Historical Society's Historic Preservation Office reviewed the project and a comment letter was sent February 10, 2006. The letter states, "We feel that there is a low likelihood cultural properties will be impacted. We, therefore, feel that a recommendation for a cultural resource inventory is unwarranted at this time. However, should cultural materials

be inadvertently discovered during this project we would ask that our office be contacted and the site investigated."

X. RECOMMENDATION FOR FURTURE ENVIRONMENTAL ANALYSIS

[ ] EIS [ ] More Detailed EA [X] No Further Analysis

Rationale for Recommendation: Through this EA, The Montana DEQ has verified that none of the adverse impacts of the Goodan-Keil Water District's Water System Improvements Project are significant. Therefore, an environmental impact statement is not required. The environmental review was conducted in accordance with the Administrative Rules of Montana (ARM) 17.4.607 thru 17.4.610.

EA Prepared By:

Robert Ashton Date

EA Reviewed By:

Marc Golz, P.E. Date